AMENDMENTS TO THE CLAIMS:

The following listing of claims will replace all prior versions, and listings, of claims in the application:

1-12. (Canceled)

13. (New) A 1,4-diacetylene polymer that is soluble in an organic solvent, composed of a repeating unit represented by the general formula =CR-C≡C-CR'= (wherein R and R' represent identical or different monovalent organic substituents), and has an average degree of polymerization of 4 to 200 and a ratio (Mw/Mn) of weight average molecular weight (Mw) to number average molecular weight corresponding to said average degree of polymerization (Mn) of 1.1 to 5.0; wherein,

the organic substituents R and R' are selected from:

$(CH_2)_mOCONHCH_2COOC_nH_{2n+1}$ (wherein m represents an integer within the range of 3 to 6, and n represents an integer within the range of 1 to 10),

$(CH_2)_mCONHCH_2COOC_nH_{2n+1}$ (wherein m represents an integer within the range of 3 to 6, and n represents an integer within the range of 1 to 10),

$(CH_2)_mOSO_2C_6H_4CH_3$ (wherein m represents an integer within the range of 3 to 6), and

$(CH_2)_mOCONHCH_2CONHC_nH_{2n+1}$ (wherein m represents an integer within the range of 3 to 6, and n represents an integer within the range of 1 to 10).

14. (New) A process for producing the 1,4-di-substituted diacetylene polymer as claimed in claim 13, further comprising the step of irradiating a solution of soluble 1,4-di-substituted diacetylene polymer with laser light having a wavelength within the range of 250 to 1,200 nm, to cause a photodegradation reaction of said polymer.

15. (New) A process for producing a 1,4-di-substituted diacetylene polymer as claimed in claim 14, wherein the irradiation time is from 10 seconds to 180 minutes.

16. (New) A process for producing the 1,4-di-substituted diacetylene polymer as claimed in claim 13, further comprising the step of heating a solution of soluble 1,4-di-substituted diacetylene polymer to a temperature of 100 to 300°C to cause thermal degradation of said polymer.

17. (New) A process for producing a 1,4-di-substituted diacetylene polymer as claimed in claim 16, wherein the heating time is from 30 minutes to 5 hours.

18. (New) A composite composition in which the 1,4-di-substituted diacetylene polymer as claimed in claim 13 is compatible with a transparent sheet.

19. (New) The composite composition as claimed in claim 18, wherein the transparent sheet is selected from the group consisting of an aromatic vinyl resin, acrylic resin, polyester, polycarbonate, polyurethane, polyamide, polysulfone, polycyclopentadiene, photosetting resin and thermosetting resin.

20. (New) A composite composition with an inorganic polymer obtained by reacting the 1,4-di-substituted diacetylene polymer as claimed in claim 13 in a polycondensation reaction with a metal alkoxide represented by alkoxysilane.

21. (New) An optical part obtained by using one of a film, sheet and three-dimensional molding based on the compositions as claimed in claim 20 and in which the 1,4-di-substituted diacetylene polymer is compatible with a transparent sheet.

22. (New) An optical part obtained by using the composite compositions as claimed in claim 16 as a surface layer and in

which the 1,4-di-substituted diacetylene polymer is compatible with a transparent sheet.

23. (New) The optical part according to claim 22, wherein the composite compositions are used in transparent sheets, microspherical resonators and optical waveguides.

24. (New) A process for producing the 1,4-di-substituted diacetylene polymer as claimed in claim 14, wherein the laser light has a wavelength within the range of 550 to 900 nm.